

Docket: 408204

IN THE CLAIMS

1. (Currently Amended) A method of constructing a preformed solder bar made-ready-for installing a microchip to a corresponding circuit connection, comprising:
  - forming a socket on a first surface of a microchip, such that the socket has predetermined physical dimensions complementary to those of a microchip connection pad footprint occupied by at least one contact pad area on the microchip, the socket presenting a conductive base capable of bonding to solder; and
  - forming a solder layer bar in substantially continuous contact with the conductive base to ~~form a solder bar in the socket~~ and place the microchip in made-ready condition for installation prior to reflowing the solder for bonding to the circuit connection,
  - the solder bar presenting an elongate axis parallel to a plane of the footprint, the solder bar filling the footprint.
2. (Original) The method of claim 1, wherein the microchip contains a silicon wafer and the step of forming the socket comprises
  - depositing an adhesion layer onto the wafer, and
  - depositing under-bump-metallization (UBM) material contacting the adhesion layer to complete formation of the conductive base.
3. (Original) The method of claim 2, wherein the step of depositing the adhesion layer includes depositing a conductor selected from the group consisting of aluminum, nickel-vanadium, titanium, tungsten and copper.
4. (Previously Presented) The method of claim 2, wherein the step of depositing the UBM material includes depositing a conductor selected from at least one of titanium, tungsten, vanadium, tin, copper, aluminum, gold, silver, and lead.

Docket: 408204

5. (Previously Presented) The method of claim 1, wherein the step of forming the socket includes forming the socket such that the socket has predetermined dimensions complementary to a microchip connection pad footprint having a geometry selected from the group consisting of rectangular, "E," "L," and "U" shapes.

6. (Original) The method of claim 1, wherein the step of forming the socket includes the physical dimensions selected from the group consisting of ring, square, and circular shapes.

7. (Currently Amended) The method of claim 1, wherein the step of forming the solder ~~layerbar~~ comprises forming a solder bar having a planar rectilinear configuration wherein a plane of the solder bar is parallel to the socket and the elongate axis.

8. (Currently Amended) The method of claim 1, wherein the step of forming the solder ~~layerbar~~ comprises forming a solder bar having a planar curvilinear configuration wherein a plane of the solder bar is parallel to the socket and the elongate axis.

9. (Previously Presented) The method of claim 1, the step of forming the socket comprising a step of forming a passivation layer on substantially all of the first surface, exclusive of an area where the socket is located.

10. (Previously Presented) The method of claim 9, wherein the step of forming the passivation layer includes the steps of:

applying one or more layers of passivation material to the entire first surface; and  
removing a selected portion of the passivation material from an area where the socket is to be located.

11. (Previously Presented) The method of claim 10, wherein the step of applying one or more layers of passivation material includes applying at least one layer

Docket: 408204

selected from the group consisting of polysilicon, silicon dioxide, silicon nitride, oxynitride, polyimide and benzocyclobutane.

12. (Withdrawn - Currently Amended) The method of claim 1, further comprising depositing a non-solder base metal in the socket after the step of forming the socket and prior to the step of forming [[a]]the solder layerbar, such that the solder bar contains the non-solder base metal and the solder in respective layers.

13. (Withdrawn) The method of claim 12, wherein the step of depositing the non-solder base metal includes electroplating the non-solder base metal.

14. (Withdrawn) The method of claim 12, wherein the step of depositing the non-solder base metal includes screen printing at least one base metal layer.

15. (Withdrawn) The method of claim 14, wherein the step of depositing the non-solder base metal includes depositing a layer selected from the group consisting of copper, gold, platinum, palladium, silver, aluminum, tin, bismuth, lead, titanium, tungsten, vanadium and alloys thereof.

16. (Withdrawn - Currently Amended) The method of claim 1, wherein the step of forming [[a]]the solder layerbar includes electroplating one or more solder layers.

17. (Withdrawn - Currently Amended) The method of claim 1, wherein the step of forming [[a]]the solder layerbar includes screen printing one or more solder layers.

18 - 24. (Cancelled)

25. (Previously Presented) The method of claim 1, wherein forming a socket comprises forming the socket such that one of a depth and a width of the socket is at least twice the other of the depth and the width.

Docket: 408204

26. (Currently Amended) The method of claim 1, wherein forming the solder layerbar comprises forming [[a]]the solder bar with a width or a depth that is at least four times the height of the solder bar.

27. (Previously Presented) The method of claim 2, wherein depositing an adhesion layer comprises one of electroplating and screen printing the adhesion layer.

28. (Previously Presented) The method of claim 2, wherein depositing under-bump-metallization (UBM) material comprises sputtering the UBM material.

29. (New) The method of claim 1, wherein the corresponding circuit connection comprises one of a PCB, another microchip, and a ceramic interposer.